

CLAIMS

What is claimed is:-

1. (Currently amended) A stepped section aerofoil profile, constructed as follows: -

a conventional section aerofoil profile is chosen wherein said conventional section has a leading edge, a center portion and a trailing edge, the section is at zero angle of attack, with the tip of the leading edge directly in line horizontally with the tip of the trailing edge;

said conventional section has a chord length and a thickness;

a box is drawn for construction purposes, the box being between one third and two thirds of the length of said conventional section chord;

the height of said box is between half of and once the length of said box;

the center of said box is placed over the center of said conventional section;

said center portion of said conventional section, between the two vertical lines of said box, is removed;

said trailing edge of said conventional section is moved vertically downwards, between 0.5 and 3.0 times the thickness of said conventional section, the distance being reliant on the application of the aerofoil;

the top rearmost point of said leading edge is then joined to the top foremost point of said trailing edge, using an flattened 'S' shaped line, to form the top surface and the step of said stepped section aerofoil profile;

the lower rearmost point of said leading edge is then joined to the lower foremost point of said trailing edge, using an flattened 'S' shaped line, parallel to said top surface, and to form the lower surface and step of said stepped section aerofoil profile;

said construction box is now removed, providing the complete stepped section aerofoil profile.

2. (Previously presented) An aerofoil as claimed in claim 1 manufactured as a high aspect ratio aircraft wing incorporating said step;

said step depth is between half of said wing thickness and once said wing thickness at said wing root;

said step tapers, from maximum depth inboard of said wing, to zero depth at the tip of said wing.

3. (Previously presented) An aerofoil as claimed in claim 1 manufactured as a low aspect ratio aircraft wing incorporating said step;

said step depth is between once said wing thickness and twice said wing thickness at said wing root;

said step tapers, from maximum depth inboard of said wing, to zero depth at the tip of said wing.

4. (Previously presented) An aerofoil as claimed in claim 1 manufactured as a delta aircraft wing incorporating said step;

said step depth is between twice said wing thickness and three times said wing thickness at said wing root;

said step tapers, from maximum depth inboard of said wing, to zero depth at the tip of said wing.

5. (Previously presented) An aerofoil as claimed in claim 1 manufactured as a helicopter rotor blade incorporating said step;

said step depth is between half of said blade thickness and twice said blade thickness along the whole length of said blade.

6. (Previously presented) An aerofoil as claimed in claim 1 manufactured as an aircraft propeller blade incorporating said step;

said step depth is between half of said blade thickness and twice said blade thickness along the whole length of said blade.

7. (Previously presented) An aerofoil as claimed in claim 1 manufactured as a turbofan fan blade incorporating said step;

said step depth is between half said blade thickness and twice said blade thickness at said blade tip;

said step tapers, from maximum depth at the tip of said blade, to zero depth at the root of said blade.

8. (Previously presented) An aerofoil as claimed in claim 1 used for any kind of lift or down force, thrust or suction or as an impellor.